

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Currently amended) A method for a communication system having at least a first user and a second user, comprising:

determining in an apparatus a regeneration factor associated with the first user based on a received signal; and

determining in said apparatus a regeneration factor associated with the second user based on the received signal, the regeneration factor associated with the first user being different from the regeneration factor associated with the second user, a frequency range associated with the first user having at least a portion overlapping with at least a portion of a frequency range associated with the second user, a time range associated with the first user having at least a portion overlapping with at least a portion of a time range associated with the second user.

2. (Previously presented) The method of claim 1, further comprising:
modifying a regenerated signal associated with the first user based on the determined regeneration factor associated with the first user to produce a modified regenerated signal associated with the first user; and

modifying a regenerated signal associated with the second user based on the determined regeneration factor associated with the second user to produce a modified regenerated signal associated with the second user.

3. (Previously presented) The method of claim 2, further comprising:

regenerating an estimate of a contribution associated with the first user to the received signal based on a detected signal associated with the first user to produce the regenerated signal associated with the first user;

regenerating an estimate of a contribution associated with the second user to the received signal based on a detected signal associated with the second user to produce the regenerated signal associated with the second user;

estimating an interference signal associated with the first user based on the modified regenerated signal associated with the first user;

estimating an interference signal associated with the second user based on the modified regenerated signal associated with the second user;

subtracting the interference signal associated with the second user from the received signal to produce a next-stage signal associated with the first user; and subtracting the interference signal associated with the first user from the received signal to produce a next-stage signal associated with the second user.

4. (Original) The method of claim 1, further comprising:

receiving a first portion of the received signal at a first time period and a second portion of the received signal at a second time period,

the regeneration factor associated with the first user having a first value determined based on the first portion of the received signal and having a second value determined based on the second portion of the received signal,

the regeneration factor associated with the second user having a first value determined based on the first portion of the received signal and having a second value determined based on the second portion of the received signal.

5. (Previously presented) The method of claim 1, wherein the determining the regeneration factor associated with the first user and determining the regeneration factor associated with the second user are iteratively repeated.

6. (Previously presented) The method of claim 1, wherein the determining the regeneration factor associated with the first user and determining the regeneration factor associated with the second user are performed for the first user and the second user substantially concurrently in parallel.

7. (Canceled)

8. (Original) The method of claim 1, wherein the determining the regeneration factor associated with the first user is calculating the regeneration factor associated with the first user based on a function of a soft decision associated with the received signal.

9. (Original) The method of claim 1, wherein the determining the regeneration factor associated with the first user is calculating the regeneration factor associated with the first user based on a function of a likelihood ratio associated with the received signal.

10. (Original) The method of claim 1, wherein the determining the regeneration factor associated with the first user is calculating the regeneration factor associated with the first user based on a hyperbolic tangent function of a likelihood ratio associated with the received signal.

11. (Original) The method of claim 1, wherein the determining the regeneration factor associated with the first user is calculating the regeneration factor associated with the first user based on a hyperbolic tangent function of a soft decision associated with the received signal.

12. (Original) The method of claim 1, wherein:

the first user is associated with a first communication cell, and
the second user is associated with a soft handoff from a second communication cell to the first communication cell.

13. (Currently amended) A method for a communication system, comprising:

receiving in an apparatus a signal associated with a plurality of users to produce a received signal;

determining in said apparatus a plurality of regeneration factors associated with the plurality of users based on the received signal, a frequency range associated with a first user from the plurality of users having at least a portion overlapping with at least a portion of a frequency range associated with a second user from the plurality of users, a time range associated with the first user from the plurality of users having at least a portion overlapping with at least a portion of a time range associated with the second user from the plurality of users; and

modifying a regenerated signal associated with each user from the plurality of users based on the determined regeneration factor associated with that user to produce a modified regenerated signal for each user.

14. (Original) The method of claim 13, wherein each regeneration factor from the plurality of regeneration factors being uniquely associated with a user from the plurality of users.

15. (Original) The method of claim 13, wherein each regeneration factor from the plurality of regeneration factors is determined separately.

16. (Previously presented) The method of claim 13, further comprising:
regenerating an estimate of a contribution to the received signal associated with each user from the plurality of users based on a detected signal to produce the regenerated signal associated with each user from the plurality of users; and
estimating an interference signal associated with each user from the plurality of users based on the modified regenerated signal associated with each user.
17. (Original) The method of claim 13, wherein the determining and the modifying are iteratively repeated.
18. (Original) The method of claim 13, wherein the determining and the modifying are performed substantially concurrently in parallel for each user from the plurality of users.
19. (Canceled)
20. (Previously presented) The method of claim 13, wherein the determining the plurality of regeneration factors is calculating the plurality of regeneration factors based on a function of a soft decision associated with the received signal.
21. (Original) The method of claim 13, wherein the determining the plurality of regeneration factors is calculating the plurality of regeneration factors based on a hyperbolic function of a likelihood ratio associated with the received signal.
22. (Previously presented) The method of claim 13, wherein the determining the plurality of regeneration factors is calculating the plurality of regeneration factors based on a hyperbolic tangent function of a soft decision associated with the received signal.

23. (Previously presented) The method of claim 13, wherein the determining the plurality of regeneration factors is calculating the plurality of regeneration factors based on a hyperbolic tangent function of a likelihood ratio associated with the received signal.

24. (Previously presented) The method of claim 13, wherein the plurality of users is associated with one from the group of a first communication cell and a soft handoff from a second communication cell to the first communication cell.

25. (Currently amended) A method for a communication system, comprising:
determining in an apparatus a plurality of soft-decision regeneration factors associated with a plurality of users, each soft-decision regeneration factor from the plurality of soft-decision regeneration ~~one~~ factors being uniquely associated with each user from the plurality of users; and
canceling interference, for a first user from the plurality of users, from a received signal based on the plurality of soft-decision regeneration factors excluding the soft-decision regeneration factor associated with the first user.

26. (Original) An apparatus, comprising:
a first regeneration-factor processor, the first regeneration-factor processor determining a regeneration factor associated with a first user based on a received signal; and
a second regeneration-factor processor coupled to the first regeneration-factor processor, the second regeneration-factor processor determining a regeneration factor associated with a second user based on the received signal, a frequency range associated with the first user having at least a portion overlapping with at least a portion of a frequency range associated with the second user, a time range associated with the first user having at least a portion overlapping with at least a portion of a time range associated with the second user.

27. (Previously presented) The apparatus of claim 26, further comprising:

a first modified-signal generator coupled to the first regeneration-factor processor, the first modified-signal generator receiving the regeneration-factor associated with the first user from the first regeneration-factor processor and receiving a regenerated signal associated with the first user, the first modified-signal generator modifying the regenerated signal associated with the first user based on the regeneration-factor associated with the first user; and

a second modified-signal generator coupled to the second regeneration-factor processor, the second modified-signal generator receiving the regeneration-factor associated with the second user from the second regeneration-factor processor and receiving a regenerated signal associated with the second user, the second modified-signal generator modifying the regenerated signal associated with the second user based on the regeneration-factor associated with the second user.

28. (Previously presented) The apparatus of claim 27, further comprising:

an interference estimator coupled to the first modified-signal generator and the second modified-signal generator, the interference estimator estimating an interference signal associated with the second user, the interference estimator subtracting the interference signal associated with the second user from the received signal to produce a next-stage signal associated with the first user.

29. (Previously presented) The apparatus of claim 28, wherein the interference estimator estimates an interference signal associated with the first user, the interference estimator subtracting the interference signal associated with the first user from the received signal to produce a next-stage signal associated with the second user.

30. (Previously presented) The apparatus of claim 27, further comprising:

a first user-contribution received-signal regenerator coupled to the first modified-signal generator, the first user-contribution received-signal regenerator producing the regenerated signal

associated with the first user based on the received signal, the first user-contribution received-signal regenerator including a channel estimator associated with a low-pass filter determined as a function of an expected Doppler frequency associated with the first user; and

a second user-contribution received-signal regenerator coupled to the second modified-signal generator, the second user-contribution received-signal regenerator producing the regenerated signal associated with the second user based on the received signal, the second user-contribution received-signal regenerator including a channel estimator associated with a low-pass filter determined as a function of an expected Doppler frequency associated with the second user.

31. (Currently amended) The apparatus of claim 27, further comprising:

a first user-contribution received-signal regenerator coupled to the first modified-signal generator, the first user-contribution received-signal regenerator producing the regenerated signal associated with the first user based on the received signal, the first user-contribution received-signal regenerator including a channel estimator, ~~the channel estimator of the first user-contribution received-signal regenerator estimating a phase and an amplitude of each multipath component associated with the received signal based on a pilot signal;~~ and

a second user-contribution received-signal regenerator coupled to the second modified-signal generator, the second user-contribution received-signal regenerator producing the regenerated signal associated with the second user based on the received signal, the second user-contribution received-signal regenerator including a channel estimator, ~~the channel estimator of the second user-contribution received-signal regenerator estimating a phase and an amplitude of each multipath component associated with the received signal based on the pilot signal.~~

32. (Currently amended) The apparatus of claim 26, wherein the first regeneration-factor processor determines the regeneration factor associated with the first user based on the received signal and the second regeneration-factor processor determines the regeneration factor associated with the second user based on the received signal repeatedly in an iterative manner.

33. (Currently amended) The apparatus of claim 26, wherein the first regeneration-factor processor determines the regeneration factor associated with the first user based on the received signal and the second regeneration-factor processor determines the regeneration factor associated with the second user based on the received signal substantially concurrently in parallel.

34. (Canceled)

35. (Original) The apparatus of claim 26, wherein the first regeneration-factor processor determines the regeneration factor associated with the first user by calculating the regeneration factor associated the first user based on a function of a soft decision associated with the received signal.

36. (Original) The apparatus of claim 26, wherein the first regeneration-factor processor
determines the regeneration factor associated with the first user by calculating the
regeneration factor associated with the first user based on a function of a likelihood ratio
associated with the received signal.

37. (Original) The apparatus of claim 26, wherein the first regeneration-factor processor determines the regeneration factor associated with the first user is calculating the regeneration factor associated with the first user based on a hyperbolic tangent function of a likelihood ratio associated with the received signal.

38. (Original) The apparatus of claim 26, wherein the first regeneration-factor processor determines the regeneration factor associated with the first user is calculating the regeneration factor associated with the first user based on a hyperbolic tangent function of a soft decision associated with the received signal.

39. (Original) The apparatus of claim 26, wherein:
the first user is associated with a first communication cell, and
the second user is associated with a soft handoff from a second communication cell to the first communication cell.

40. (Currently amended) An apparatus, comprising:
a plurality of regeneration-factor generators determining a plurality of regeneration factors associated with a plurality of users based on a received signal to produce a plurality of regeneration-factor signals, a frequency range associated with a first user from the plurality of users having at least a portion overlapping with at least a portion of a frequency range associated with a second user from the plurality of users, a time range associated with the first user from the plurality of users having at least a portion overlapping with at least a portion of a time range associated with the second user from the plurality of users; and
a plurality of modified-signal generators coupled to the plurality of regeneration-factor generators, the plurality of modified-signal generators receiving the plurality of regeneration-factor signals from the plurality of regeneration-factor generators and receiving a plurality of regenerated signals, the plurality of modified-signal generators modifying the plurality of regenerated signals based on the plurality of regeneration-factor signals.

41. (Previously presented) The apparatus of claim 40, wherein:
each regeneration-factor generator from the plurality of regeneration-factor generators is uniquely associated with a user from the plurality of users.

42. (Original) The apparatus of claim 40, further comprising:
an interference estimator coupled to the plurality of modified-signal generators, the interference estimator estimating an interference signal associated with each user from the plurality of users, the interference estimator subtracting the interference signal associated with each user from the received signal to produce a next-stage signal associated with each user.

43. (Currently amended) The apparatus of claim 40, wherein at least one regeneration-factor generator determines thea plurality of regeneration factors in an iterative manner.

44. (Currently amended) The apparatus of claim 40, wherein the plurality of regeneration-factor generators determines thea plurality of regeneration factors substantially concurrently in parallel.

45. (Canceled)

46. (Previously presented) The apparatus of claim 40, wherein the plurality of regeneration-factor generators calculates the regeneration factor associated with each user based on a function of a soft decision associated with the received signal.

47. (Previously presented) The apparatus of claim 40, wherein the plurality of regeneration-factor generators calculates the regeneration factor associated with each user based on a function of a likelihood ratio associated with the received signal.

48. (Previously presented) The apparatus of claim 40, wherein the plurality of regeneration-factor generators calculates the regeneration factor associated with each user based on a hyperbolic tangent function of a likelihood ratio associated with the received signal.

49. (Previously presented) The apparatus of claim 40, wherein the plurality of regeneration-factor generators calculates the regeneration factor associated with each user based on a hyperbolic tangent function of a soft decision associated with the received signal.

50. (Original) The apparatus of claim 40, wherein:
the first user of the plurality of users is associated with a first communication cell, and
the second user of the plurality of users is associated with a soft handoff from a second communication cell to the first communication cell.

51. (Previously presented) An apparatus, comprising:
a regeneration-factor processor, the regeneration-factor processor determining a regeneration factor associated with each user from a plurality of users based on a received signal, a frequency range associated with a first user from the plurality of users having at least a portion overlapping with at least a portion of a frequency range associated with a second user from the plurality of users, a time range associated with the first user from the plurality of users having at least a portion overlapping with at least a portion of a time range associated with the second user from the plurality of users; and
a modified-signal generator coupled to the regeneration-factor processor, the regeneration-factor processor and the modified-signal generator operating in series for each user from the plurality of users.

52. (Previously presented) An apparatus, comprising:
means for determining a regeneration factor associated with a first user based on a received signal; and
means for determining a regeneration factor associated with a second user based on the received signal, the regeneration factor associated with the first user being different from the regeneration factor associated with the second user, a frequency range associated with the first user having at least a portion overlapping with at least a portion of a frequency range associated with the second user, a time range associated with the first user having at least a portion overlapping with at least a portion of a time range associated with the second user.

53. (Currently amended) A method for performing estimation within a communication system, comprising:

determining a cutoff frequency based on an expected Doppler frequency associated with a first user; and

estimating a phase and an amplitude of each multipath component associated with a received signal based on ~~a pilot signal and a low-pass filter having the~~ determined cutoff frequency.

54. (Currently amended) A method for performing estimation within a communication system, comprising:

determining in an apparatus a cutoff frequency based on an expected Doppler frequency associated with a first user; and

low-pass filtering a plurality of rake finger signals based on ~~a pilot signal and the~~ determined cutoff frequency to produce an estimated phase and an estimated amplitude of each multipath component associated with a received signal.